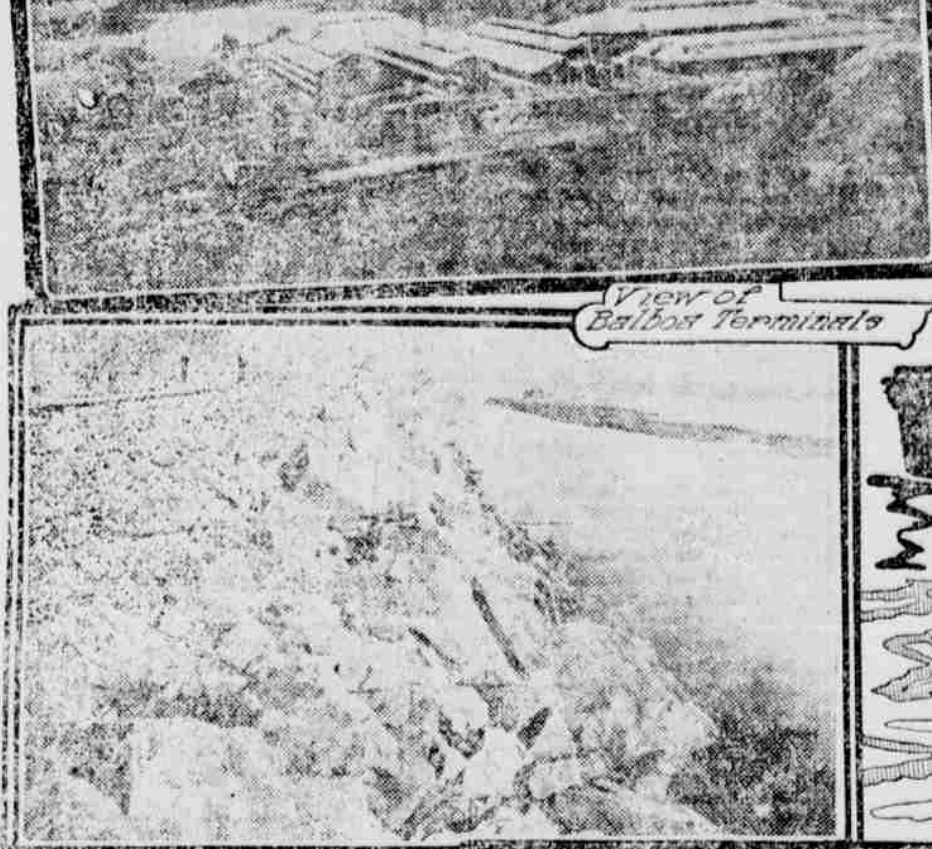
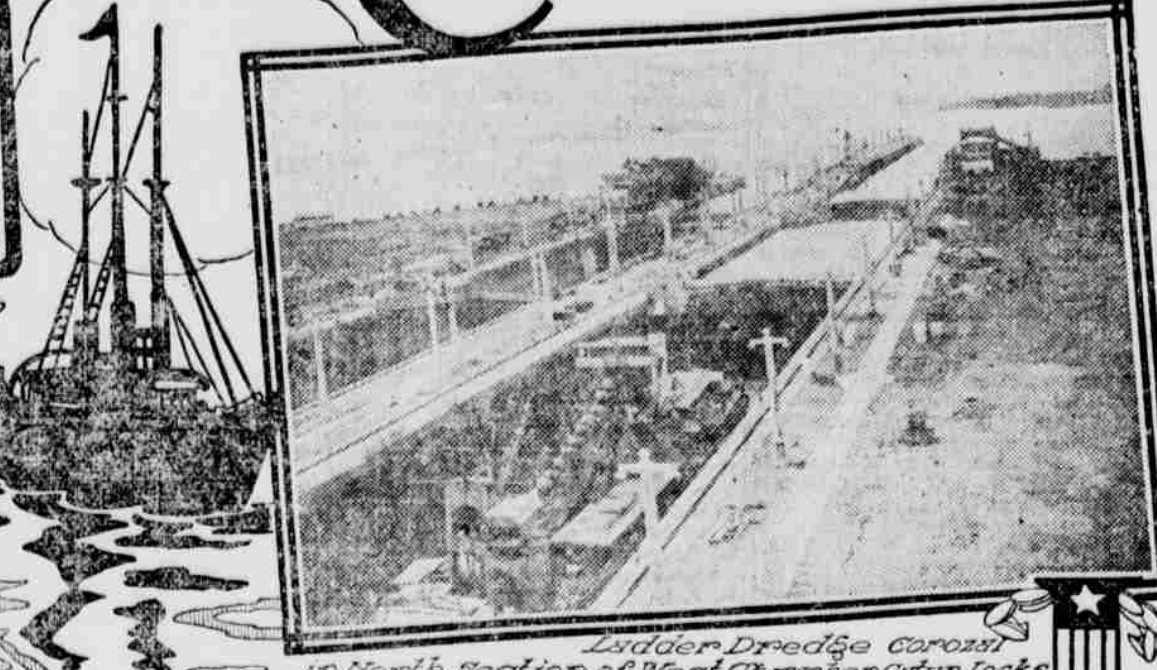


# Putting the Finishing Touches to the CANAL

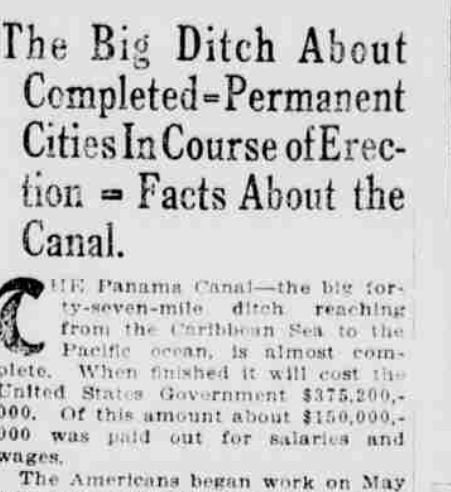


View of Balboa Terminal

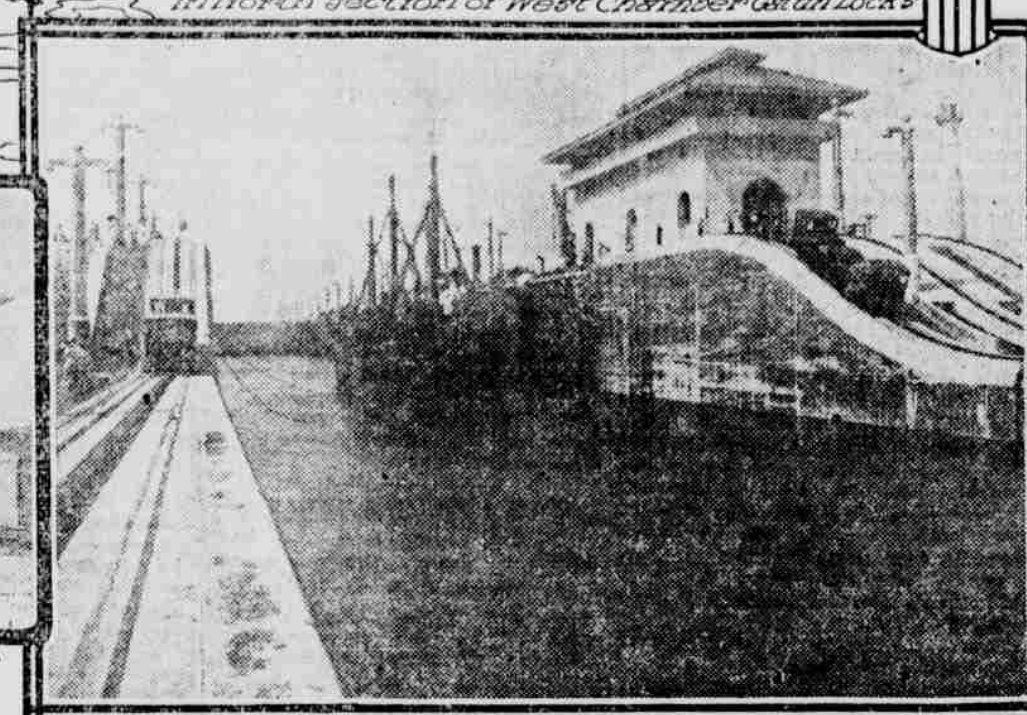


Ladder Dredge Working in North Section of West Chamber of Gatun Locks

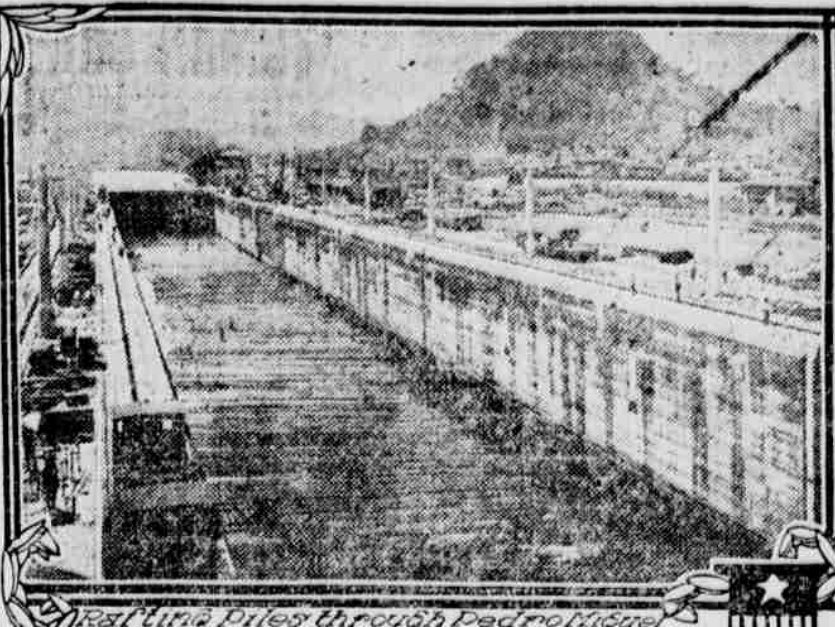
1805 Island Breakwater



Colon Waterworks at Mt. Hope Concrete Filter House



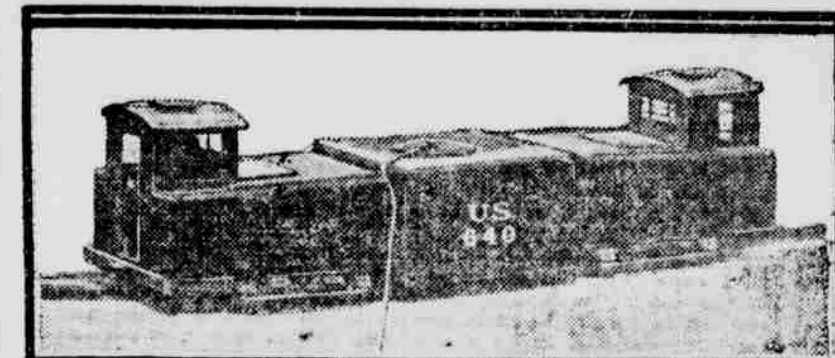
U.S. Severn Leaving Upper East Chamber of Gatun Locks in Tow of Electric Locomotive



First Time Piles through Pedro Miguel Locks



Miraflores Locks Northwest Wing Wall looking North Across Miraflores Lock



Type of Electric Motor which will Power Vessels through the Canal

## The Big Ditch About Completed—Permanent Cities in Course of Erection—Facts About the Canal.

THE Panama Canal—the big forty-seven-mile ditch reaching from the Caribbean Sea to the Pacific ocean, is almost complete. When finished it will cost the United States Government \$375,200,000. Of this amount about \$150,000,000 was paid out for salaries and wages.

The Americans began work on May 4th, 1904, with 746 employees. These were increased from time to time until the number at the busiest period reached 44,000. Between five and six thousand of the workers were Americans who filled such positions as engineers, foremen, clerks and policemen. Of these the greater number came from Pennsylvania. New York was a close second in furnishing employees for the Canal and Ohio third. Men from eighty-seven countries worked on the ditch as laborers.

The average temperature of the Canal Zone, which comprises 448 square miles, is 85 degrees. The vegetation is tropical and the rainfall heavy, the annual average on the Atlantic side being 130 inches, and on the Pacific 70 inches. These conditions coupled with excessive humidity naturally brought illness to the fore, and during the early days many of the workers died from malaria. In 1905 there was a yellow fever epidemic and thirty-seven employees were among its victims. When Colonel William C. Gorgas came to Panama to clean up, the death rate was 49.94 per 1000. In 1914 in the same places it was 21.18, cut down more than one-half. This decrease in the death rate was brought about by cleaning up the sites, killing the mosquitoes and enforcing a rigid quarantine. Thirteen hundred employees were required in the sanitary department to carry out the reform in cleanliness, and it cost the Government \$16,500,000 to make the place a livable one for the white man. The money was well spent, for it is doubtful whether the canal could have been built at all if the sanitary squad had relaxed its vigilance.

During the period extending over ten years of American rule on the Zone about six thousand employees died, eleven hundred being killed by accidents, such as dynamite explosions, being run over by trains, hit by cranes, etc.

Each employee was given thirty days' sick leave each year with pay and free medical attention. Twenty-four out of every thousand employees have been constantly on sick leave, the most of them in the hospitals which have a capacity of about twelve hundred patients. Six weeks' vacation with pay was allowed to the American employees.

**Canal Commission Abolished.**  
On April first of this year the Isthmian Canal Commission was abolished and the permanent organization for the operation and maintenance of the canal was put into effect, with Colonel George W. Goethals as Governor.

Ever since the canal work was taken over by the Americans a Canal Commission has existed. From time to time changes were made by the retirement of different members. There was, however, little change made in the policy of that body after 1908, when Colonel Goethals became its chairman. The labors of the Commission were by no means easy, and many times their plans were unjustly attacked by a hostile press. Time and again muck rakers visited the canal and when they were unable to find the slightest trace of graft they set about to criticize certain plans of the canal. For instance, the Gatun Dam was reported as sinking. This is one of the world's greatest pieces of engineering, and was set up to dam the Chagres River and form Gatun Lake, the largest artificial body of water in the world. The construction of this dam alone cost thirteen and one-half million dollars. It was commenced in 1906, and finished in 1914. For the first two or three years the plans of the dam were assailed in the most bitter terms, but the engineers never changed their plans, and after it was completed in 1913 these same muck rakers were loud in their praise.

Others took up the slanders in Culebra Cut, and one sent a report to his paper that the sides of the cut were smoking and that a volcano was under the Gold Hill. The report spread over the country and experts were sent to the Isthmus only to find that no such conditions existed.

criticism, yet every canal employee will tell you that he has been able to support his family on food just as pure as that sold in the United States and at far less cost. The workmen were well housed—far better than those who are engaged in factory labor in the United States. Of course, once in awhile a disgruntled workman gave out a story of unfair treatment which upon investigation was found to be merely a trifling disagreement between the foreman and himself. The women, too, sometimes complained—perhaps because Mrs. Brown had better looking dining-room furniture, or the apartment of Mrs. Jones had larger rooms, but on the whole even the women agree that life on the Canal Zone is all that could be wished for, and that everybody was given a fair deal.

Every act of the Commission was made public, and each employee from the chief engineer to the poorest laborer was given a hearing if he felt that he was not receiving his just deserts. Colonel Goethals for several years held open court every Sunday morning for the purpose of hearing complaints. Indeed, this court has gone down in history as one of the most remarkable ways of dealing out justice. Each member of the Commission had a special duty—a duty which was so well performed that one of its members, Colonel D. D. Gaillard, gave his life in that line—a martyr to the greatest work ever undertaken by man. When the Commission completed their task the canal was practically ready for small steamers and was opened to them on the 15th day of May. Had it not been for the action of the Cucaracha slide the canal as far as the waterway was concerned, would have been completed a year before its formal opening, which has been set for January 1st, 1915. As it is, barring accidents, it is believed that it will be ready for the use of all vessels in September.

**Cucaracha Slide Troublesome.**  
The Cucaracha slide has been the bête noir ever since the work began, and even in the days of the French it was the head-on of progress. The channel through Culebra Cut is at present about two hundred feet wide, one hundred feet less than it will be when completed. The slides there have already reached the enormous figure of 2,200,000 cubic yards of earth and still the monster Cucaracha resists control. Colonel Gaillard, who was the engineer in charge of the Central Division since 1908, believed that the water would give stability to the slides and stop its progress, and perhaps it has in a measure, but not as completely as Colonel Gaillard had hoped. The fight against Cucaracha led to Colonel Gaillard's death. Day and night he planned against its progress, only to meet defeat. Finally, nature could stand no more and the faithful officer came North for rest and medical treatment—a physical and mental wreck, dying a few months later.

**"Gaillard Cut."**  
Recently President Finley, of the Southern Railroad, made the suggestion to President Wilson that the name Culebra Cut be changed to the "Gaillard Cut" as a memorial to the dead officer. President Wilson was pleased with the suggestion and it is more than likely that he will act upon it favorably and thus perpetuate the name of the great engineer.

**Gatun Locks Completed First.**  
The Gatun locks were completed first, and have been so thoroughly tested that early in June the "Alliance," one of the passenger steamers belonging to the Panama Railroad fleet, made a round trip through the locks. This experiment, however, was not as interesting as the using of the locks as a dry dock for the fleet of submarines. These little boats, five in number, were completely submerged while the filling process was going on. They rested on specially constructed cradles directly over the culvert openings in the lock floor. The water came in with considerable force but the well filled ballast tanks of each vessel held them in position. The water was afterwards let out and the work of re-

pairs completed on the boats. The ballast was then removed, the locks refilled, and the little boats sailed out to their post at the Atlantic entrance of the canal. This is the first time such a test has been made.

The Gatun locks are each 1000 feet long and 110 feet wide—barely large enough to accommodate the "Imperator," which is 918 feet long and 96 feet wide. About an hour and a half will be required to raise a ship through the locks—a rise of eighty-five feet.

The U. S. S. "Severn," tender to the sub-marines, has made a number of trips and the electric locomotives have proved a success. Four of these machines are used, two for the purpose of towing the vessel while the other two are used to keep the ship from bumping the sides of the locks. In climbing from lock to lock they run on an inclined cogwheel track. No vessel will be allowed to go through the locks under her own steam.

Another bit of interest in lockage was the towing of a cargo of piles through the Miraflores locks. The cargo came down the Pacific from Seattle and anchored off Balboa. The piles were lowered into the water and lashed together. They were then towed through the canal in rafts. The water in the Miraflores locks was brought up to the level of Miraflores Lake for the first time during this experiment. The electric locomotives kept the rafts in position and brought them through without once bumping against the lock walls.

**First Commercial Use Of Canal.**  
The first commercial use of the canal was made on May 18th, and the total earnings from that time until June 1st were \$7,356.12, the charge on the cargo being \$1.20 per ton. Passengers are carried free. Already there is a congestion of freight steamers anxious to pass through the canal, as eight thousand miles between New York and San Francisco are saved by passage through the new waterway.

New York is brought five thousand miles nearer to the west coast of South America. The commercial value of the canal cannot be estimated at present, but those in authority predict an increase in exports to the Orient especially of staple products of the South, such as cotton, lumber, iron and coal. Eastern machinery will enjoy cheaper rates to Pacific ports. Bulk products like lumber, wool, hides, products like wheat, will get lower freight rates through the canal from the Pacific ports. Australia will be four thousand miles nearer to the Atlantic

ports, thus cheapening the freight on the wool from that country. It will cost about \$4,000,000 annually to operate the canal and about twenty-five hundred employees will be required.

**Balboa A Real City.**  
Balboa, at the Pacific terminal, will likely become the big city of the Canal Zone, as many of the employees who have charge of the locks will live there. Great dry-docks, wharves, repair shops and warehouses and other facilities to the canal are in course of erection, several of which are at Balboa. One of the monster 270-ton cranes to be used in handling wrecks or accidents in the canal or locks will be kept at that point. A fuel station, too, will be located at Balboa. A large number of transients may be counted upon as many people will leave the ships at this point. Buyers, too, will meet vessels there.

Christobal, the Atlantic terminus, is already a thriving town, and the new Washington Hotel will draw hundreds of winter tourists from all parts of the world to the Isthmus. This hotel, like the Tivoli at Ancon, is run by the Government and everything is first class, comparing favorably with the winter hotels in Florida. The clearing away of the negro quarters has been going on for some time. This is carried out rapidly, the shacks being barged as

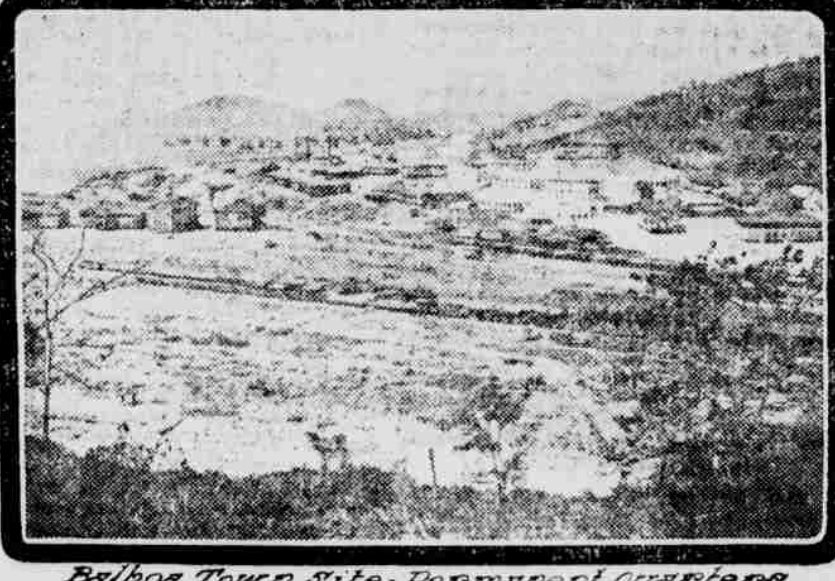
soon as they are no longer needed. At LaBoca permanent quarters are being set up for such laborers as may be needed in the working of the locks. They are being erected on land reclaimed by the dumping of the spoil from Culebra Cut. Most of them are family quarters, as nearly every negro has some member of his family to keep house and cook his meals.

**Canal Fortifications Guarded.**  
The canal will be heavily fortified at each end, and the army work there is nearing completion. The mounting of the powerful guns and mortars will begin in the early fall. Already these fortifications are being carefully guarded and no photographing is permitted anywhere near them. On April 24th the Secretary of War issued instructions asking that increased vigilance be exercised at these points and at the locks. Governor Goethals at once requested the commanding officer of the 10th U. S. Infantry, a regiment which has been stationed on the Zone for the past two years, to take over the guarding of the canal property. This officer sent two companies of the regiment to Gatun, one company to Pedro Miguel, and one to Miraflores. It is the duty of these men to protect the locks and spillways. Several times reports have been circulated that an attempt would be made to dynamite the

locks, and on one occasion several suspicious characters were arrested after a large amount of dynamite had been stolen.

Some difficulty has been experienced with the 1805 Island breakwater which had a tendency to bulge after the fashion of the Cucaracha slide, but happily this has been overcome, and a firm foundation for the breakwater secured. These were constructed on the same plan as the foundation for the over-sea railway of the Florida East Coast Railroad Company.

The lighting facilities of the canal have been entirely completed except for one or two lighthouses which are still in course of construction. The light effects on the canal at night are beautiful and can be seen for many miles.



Balboa Town Site Permanent Quarters Under Construction

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**Radio Station.**  
Work on the three 600-foot steel towers of the proposed Darien radio station at Caimito has begun and will be completed before opening day. Each tower is built in the form of an equilateral triangle, 150 feet on the side. At each corner of the triangle will be a footing of concrete. The depth of the excavation for the footing has varied from twelve to twenty-eight feet below the surface of the ground, the greater depth being necessitated by the irregular surface elevations. The concrete base will be rectangular in plan, sixteen by twenty, and ten feet deep. The building to serve as quarters for operators has been practically completed and will be provided with furniture by the Navy. New radio stations for relatively local use as compared with long distance stations are to be erected at Colon and Balboa and will supplant the ones now in service at these points. The towers resemble the ones at Arlington, Virginia, and each station will have two three hundred feet towers six hundred feet apart. The present wooden masts at Colon, about two hundred feet high, and the antennae of the present Balboa station are suspended at an elevation of about one hundred and ten feet above the ground between the steel tower and the power plant.

The Panama Railroad has recently completed a new passenger station at Panama City. This is a spacious concrete structure with a covered carriage entrance. The first and second class passengers have different waiting rooms fitted out with wash-rooms. Heretofore, both first and second class passengers purchased their tickets at the same window. This proved a disagreeable feature of travel, as frequently a white woman was compelled to get in line with a lot of negroes. In accordance with the Panama Railroad's long established custom of providing quarters for employees, the second story of the building is divided up into rooms for bachelors, making delightful, airy quarters. All the seats in the station are upholstered

cane or wooden slats. Other stations are in course of construction but the one at Panama City will be the finest and will contain the general offices. Owing to the sudden rains in the tropics all stations will have covered platforms.

**Workmen Leave With Regret.**  
Several of the schools which now embrace twenty or more nationalities will be closed as the necessity for as many no longer exists. As each section is completed the employees become fewer, and the ones who are dropped usually leave the Zone at once—many of them with the greatest reluctance.

"Working for the Americans sure do pay," said a Jamaican negro as he dragged an old steamer chair up the stevedore gang-plank of a steamer bound for Kingston. "I sure am sorry dat Canal am finished—I never will make so much money anywhere!"

This is true of the white as well as the colored, for there were hundreds of young men on the Zone doing clerical work at a salary of \$125.00 to \$150.00 per month who would receive from \$60.00 to \$75.00 for the same service in the United States. Coupled with this they had free medical attention, no house rent to pay and a six weeks' vacation. Every boat brings some of these men on the Zone, and already some of them have secured positions in many lands. Their familiarity with the work at the canal has opened new fields for them all over the world. As to the heads of the divisions they, too are scattered. Those who belong to the Army will be sent to other posts.

**President Wilson Likely To See Opening.**  
Very little remains to be done on the canal will be a financial success. To pay interest on the investment and operating expenses approximately \$15,000,000 revenue per year will be needed. Traffic experts estimate that for the first two years the average tonnage will be 10,000,000 tons, not enough at \$1.20 per ton to make the canal self-supporting from this alone. The Government will, however, monopolize the business of supplying coal and provisions and operating repair facilities which will, of course, add materially to the canal income. Storage of 450,000 tons of coal, maximum capacity is provided, and 160,000 barrels of oil.

The Interstate Commerce Commission has jurisdiction over the canal traffic.